

- II. *Notes on Odonata, of the subfamilies Corduliina, Calopterygina, and Agrionina (Légion Pseudostigma), collected by Mr. BUCKLEY, in the district of the Rio Bobonaza, in Ecuador.* By R. M'LACHLAN, F.R.S., &c.

[Read February 2nd, 1881.]

IN 1878 this Society did me the honour to publish (Trans. Ent. Soc. Lond., 1878, pp. 85—94) a short paper on *Odonata*, of the subfamily *Calopterygina*, collected by Mr. Clarence Buckley, chiefly at Intaj (or Intac) in Northern Ecuador. Upon his return to England last year, I obtained from him a considerable collection of *Odonata*, many of them most interesting and certainly new. These came from the district of the Rio Bobonaza, a tributary of the Rio Pastaza, and situated in the forest region east of the Andes. The effect of differing local conditions is most markedly shown in this latter collection, for in the *Calopterygina* (and also in other subfamilies) scarcely any of the species forwarded in the former small collection are represented in the present larger one.

It is at present not possible for me to give an analysis of the whole of the collection, and I have restricted the subject of this paper to the groups mentioned in the heading.

It will be noticed that a not inconsiderable number (considering the amount of materials) of new forms are described, and some of them are of great beauty. With regard to some of the *Calopterygina* a well-known, and ever-increasing, difficulty asserts itself, viz., that of deciding what should constitute a species, and what a "race" or variety. The insects of this subfamily prove themselves especially plastic, so far as local modifications are concerned, and it is highly probable that each elevated valley of the mountainous regions of tropical America may possess its own peculiar form of one root-species, if I may be allowed the term, just as has been already noticed in butterflies, although the aquatic habits of dragonflies in their preparatory stages do not so greatly isolate them. The beautiful genus *Thore*, is

strongly illustrative of this tendency to run into local forms, and in it (as in many other *Calopterygina*) the radical test of different structure in the anal parts can hardly be applied, so we are left with colour and markings as the chief guides. Another frequent difficulty is that of pairing the sexes, and one that is likely to remain, unless local observers make records on the spot.

CORDULIINA.

Gomphomacromia Batesi, Selys.

I have five males and one female before me. It is only in the very adult males that the wings are slightly tinged.

The following are the indications of the hitherto undescribed female:—Length of abdomen, 35 mm.; length of posterior wing, $35\frac{1}{2}$ mm.; expanse, 74 mm.

Abdomen cylindrical, slightly swollen at the base, not dilated at the apex; the ventral margins of segments 6—8 narrowly yellow; 10th segment very short. Appendages conical, pointed, nearly as long as the 9th segment. Vulvar scale shorter than the 9th segment, broad, divided to the base in its middle by a narrow triangular excision.

G. Batesi was originally discovered by Mr. Bates at St. Paulo, on the Upper Amazons.

N.B.—The four described species of *Gomphomacromia* form a somewhat heterogeneous assemblage, as constituting a single genus or subgenus.

CALOPTERYGINA.

Lais Devillei, Selys.

Of this species (described in *Compt. Rend. Soc. Ent. Belg.*, xxiii., p. 1, 1880) there are four males in the collection. It is probable that three females also belong here, but the difficulty in pairing the sexes in *Lais* is not easy when more than one species is known from the same locality. It was originally described from Baisa (Ecuador); I have it also from the Rio Napo (not “Pérou oriental?” as indicated by de Selys).

Lais metallica, Selys.

Four males and one female apparently pertain to this species. They are larger (length of abdomen, male, 41—43 mm.; length of posterior wing, male, 29—30 mm.) than the typical example; the number of antecubital nervules varies from twenty-three to twenty-eight.

These examples are very adult; there are no humeral lines on the thorax, and only two narrow and almost obliterated lateral lines (compare the original description in the 'Secondes Additions aux Calopt.,' p. 11, 1869). The posterior wings have a distinct fuscous apical spot, but not so distinctly forming a "gouttelette" as in *Devillei*, *Haurowelli*, &c. The superior appendages are similar to those of the typical examples; the inferior appendages are short, thick, and cylindrical, directed inward, very obtuse, the apex with a tuft of curled hairs.

It should be noted that the original male types were probably immature, and the locality (given as Bahia or Guiana?) somewhat uncertain.

I submitted a male to M. de Selys, who thinks my identification probably correct; but he remarks that, according to these examples, *metallica* should be placed in the same section with *Devillei*, *Haurowelli*, &c. (cf. Compt.-Rend. Soc. Ent. Belg., xxiii., p. li.).

Heterina caja, Drury.

Three adult males. They have the red portion at the base of the wings more extended, and the red spot at the apex of the posterior wings larger, than in an example from Venezuela given to me by de Selys.

With these males were four adult females, which, as no other male *Heterina* was in the collection, I refer here (notwithstanding that M. de Selys inclines to consider them *sanguinea*). These have the wings strongly and uniformly tinged with yellowish, and the neuration is wholly brownish (with a reddish tinge), excepting the costa.

Thore derivata, n. s.

♂. Adult. The black terminal portion of the wings commences at about the last fifth of the distance between the nodus and the pterostigma (thus occupying less than

one-fifth of the entire wing); it is preceded by a milky band, as is usual.

♀. Adult. The black band commences as in the male, and occupies the entire apex of the wings, excepting a terminal vestige ($1\frac{1}{2}$ mm. long), which is paler (in very adult examples this vestige probably disappears, leaving the wings coloured as in the male).

Size variable. Length of abdomen, male, 41—50 mm.; female, 35 mm. Length of posterior wing, male, 34—42 mm.; female, 37 mm. I have six males and two females before me.

Allied to *picta*, but in the latter the black terminal portion of the wings in the male commences about the last third of the distance between the nodus and the pterostigma (thus occupying more than one-fourth of the entire wing); and in the female there is a black band, commencing as in the black apex of the male, but terminating at the origin of the pterostigma, thus leaving a large apical hyaline space.

T. derivata might be considered a race of *picta*, Rbr. (*Saundersii*, Selys), but the much less extension of the dark apex of the wings in the male, and the great difference in the female, appear to entitle it to specific rank.

Thore æquatorialis, Selys?

Two immature females resemble those noticed by me in *Trans. Ent. Soc. Lond.*, 1878, p. 90, but the opaque band is very visible on both pairs of wings.

It should be remembered that in the typical examples of *æquatorialis*, which is very adult, the opaque band is scarcely evident; then, supposing all these examples to pertain to the same species, the band becomes less distinct, according to the time the insect has been flying, which is rather opposed to what we find in other instances.

Also it should be remarked that no male insect is known which can be paired with these females.

Thore concinna, n. s.

Bronzy black; head, thorax, and base of abdomen marked with the spots and lines usual in the genus, and reddish orange in colour. Pterostigma dark brown in black veins, somewhat dilated, $4-4\frac{3}{4}$ mm. long, surmounting 10—17 cellules; 41—58 ante-cubital nervules, and 58—68 post-cubital in the anterior wings.

♂. Adult. Both pairs of wing totally brilliant shining reddish cupreous (very slightly paler at the extreme base), iridescent, transparent, and without markings of any kind; neuration reddish, the costal vein blackish up to the nodus. Legs dark piceous; the femora brown internally. Appendages as is usual in the genus; the apical portion slender.

♂. Immature. Paler. The cupreous tint of the wings is wanting, and they are almost golden. Pterostigma pale greyish brown in yellowish veins. Neuration yellowish; the costal vein blackish.

♀. Adult. The wings tinged as in the male, but the colour is less brilliant. Slightly beyond the nodus is a transverse, somewhat narrow, opaque band (scarcely reaching the inner margin), brownish ochreous in colour, somewhat cuneiform, nearly straight (but oblique) in the anterior wings, slightly curved in the posterior.

Length of abdomen, male, 34—44 mm.; female, 29—31 mm. Length of posterior wing, male, 30—40 mm.; female, 29—30 mm. Expanse, male, 65—86 mm.; female, 63—66 mm.

Fifteen males and four females.

This beautiful species is certainly the most remarkable of the genus, in consequence of the brilliant cupreous tinge of the wings, which in the male have no markings of any kind, the opaque band appearing only in the female.

N.B.—There is a single very immature female in the collection that I refer to *concinna* with doubt. The wings are pale shining fuliginous, and the opaque band is pure white and less cuneiform; the pterostigma cinereous.

Thore mutata, n. s.

Very closely allied to *T. Aurora*, Selys (of the Rio Napo); differs as follows:—

The pterostigma is slightly longer and narrower (less dilated). The thoracic lines narrower and less bright.

♂. Adult. The band on the fore wings never acquires the reddish orange tint of the adult of *T. Aurora*, but remains milky opaque white, as in the immature condition of that species; moreover, the band is never succeeded by a dark coloration of the membrane (the most

that can be said is that the membrane generally has the slightest fuliginous tinge), which is indicated even in immature examples of *T. Aurora*; in effect, both pairs of wings in *mutata* are as in the posterior pair of *beata*.

♂. Immature. Pterostigma very pale brown (instead of deep black); the membrane of the wings limpid, the opaque white band less distinct.

♀. Adult. The wings slightly tinged; opaque bands as in the adult female of *T. Aurora*, but in the anterior wings the colour is yellowish ochreous, and in the posterior brownish ochreous both above and beneath; the opaque bands neither preceded nor succeeded by dark bands.

Length of abdomen, male, 31—35 mm.; female, 29 mm. Length of posterior wing, male, 28—30 mm.; female, 29 mm. Expanse, male, 55—60 mm.; female, 60 mm.

I have received eight males and one female. This and *T. Aurora* can only be considered representative species, one of the other. That most of the males of *T. mutata* are perfectly adult is proved by the deep black pterostigma, and a very adult female is still less like the parallel condition in *T. Aurora*.

T. Batesi, *Aurora*, *mutata*, and *beata* form a group of comparatively small-sized species, in which the pterostigma is notably shorter in proportion than in the others of the genus.

Cora jocosa, n. s.

Belonging to Group 1 of de Selys (Troisièmes Additions, Calopt., p. 38), in which the nodus is placed midway between the base and apex of the wings. Pterostigma black, not dilated, surmounting 6 cellules, $2\frac{1}{2}$ mm. long. 26 ante-cubital nervures, and 19 post-cubital, in the anterior wings. No sector interposed between the 1st and 2nd sectors of the triangle; the 2nd sector regularly and longly bifurcate.

♂. Adult. Wings very slightly tinged with olivaceous, more especially on the anterior margin.

Labrum and rhinarium yellowish, as are also the frontal eye-margins, face otherwise black. Top of the head black, with four round orange-coloured (or the posterior pair probably bluish in life) spots placed in a quadrangle. Prothorax pale blue. Thorax with a

dorsal median black line dilated at each end, and enclosing posteriorly two pale spots; an ante-humeral black line indicated by a large elongate oval spot; the humeral line rather broad posteriorly, but becoming very slender; the sides with three black lines, of which the first two become confluent towards the legs; inter-alar portion black, spotted with pale blue. Abdomen black; the upper side of the first six segments pale blue, with black sutures, and on the 2nd to 6th there is a triangular black expansion near the posterior end of each. Legs black; the femora brownish internally at their base.

♀. Unknown.

Length of abdomen, 32 mm. Length of posterior wing, 26 mm. Expanse, 57 mm.

The neuration is more simple than in any other known species of the genus.

N.B.—A species from Brazil, *C. brasiliensis*, Hagen, has never been described.

AGRIONINA.

Légion *Pseudostigma*.

The following species of this Légion were found by Mr. Buckley:—

Anomisma abnorme, M'Lach.

A. abnorme, M'Lach., Ent. Month. Mag., vol. xiv., p. 87, male; *Microstigma terminatum*, Id., l.c., female.

As already noticed, the type specimen from which I described *M. terminatum* is much mutilated, and the base of the wings wanting; from this cause I did not recognise it as the female of *A. abnorme*, which it certainly is.

I have now fifteen individuals of both sexes before me. In fully adult examples the dark band preceding the opaque yellow apex of the anterior wings is somewhat broader than in the less adult typical male specimen, and it is darker. In immature examples of both sexes this dark band is scarcely indicated. In the female the small white spot at the apex of the posterior wings is liable to become obsolete in fully adult examples.

The normal number of nervules in the quadrilateral is two in both pairs of wings; there are never less than two, and very rarely three.

In both sexes the apical portion of the abdomen is wholly bronzy black. In the male the 10th segment above has a deep triangular excision; superior appendages rather shorter than the 10th segment, black, flattened, and triangular, broad at the base, but the apex produced into a slender acute point; inferior appendages scarcely longer, stout, curved upward and inward, yellowish externally, the apex subacute. In the female the margin of the 10th segment is excised as in the male; the appendages are slightly shorter than the segment, black, conical, and subacute.

The size varies as follows:—Length of abdomen, male, 56—61 mm.; female, 61—63 mm. Length of posterior wing, male, 44—52 mm.; female, 45—52 mm. Expanse, male, 86—111 mm.; female, 97—109 mm.

The locality for the original examples, both male and female, should be Rio Napo, Ecuador (not “East Peru” as stated).

Anomisma should probably head the *Légion Pseudostigma*.

Microstigma rotundatum, Selys, race *exustum*, Selys.

Very common; varying much in size.

Mecistogaster Jocaste, Hagen, race *sincerus*, M'Lach.

One female (Cf. Ent. Month. Mag., vol. xiv., p. 88). The female previously alluded to as from “East Peru (?)” is really from the Rio Napo. I have not yet seen the male, which would probably decide the question as to whether *sincerus* should be considered a “race” of *Jocaste* or a distinct species. It should be noticed that in *sincerus* the humeral line is double, the two lines having their origin in an opposed sense (a vestige of the upper line is to be seen in *Jocaste*). In the examples from Pebas and the Rio Napo both lines are nearly complete; in that from the Rio Bobonaza the upper line is scarcely more than one-third the length of the lower (the latter being complete).

Mecistogaster Buckleyi, n. s.

Wings hyaline; reticulation of both pairs scarcely complicated at the extremity. Pterostigma of the anterior consisting of 5—7 cellules in the costal area only. Posterior without pterostigma.

♂. Adult (or semi-adult?). Wings having the slightest possible tinge of brownish; the inner margin commencing beyond the level of the arculus. Anterior without any opaque apical space; the pterostigma dark brown (but the margins of the nervules narrowly hyaline). Posterior with a small (4 mm. broad) milky-white (or yellowish) opaque apical space, in which the costal margin is slightly dilated.

Neuration of both pairs black; whitish in the apical space of the posterior. Head black above (in one example the epistoma and the front of the head are wholly greenish, and the labrum yellowish; in the other the epistoma is black, and the labrum very dark olivaceous, with a narrow yellow anterior margin). Prothorax black, with a very narrow pale yellow margin, and a greenish yellow lateral spot on either side. Thorax black; a narrow yellow dorsal line; two greenish yellow humeral lines having their origin in an opposed sense, the upper very short, and scarcely overlapping the lower; sides and beneath yellow; a black lateral line not extending to the posterior legs; no pectoral line, but only two small black spots, one anteriorly, the other posteriorly. Abdomen bronzy black, with a narrow yellow lateral line extending the whole length (or to the 6th segment only); 8th, 9th, and 10th segments bluish (wholly or in part) above, the 8th scarcely longer than the 9th. Appendages black, as long as the 10th segment, stout, curved regularly inward at the tips. Legs yellow; a line on the femora externally and on the tibiæ internally, and the tibiæ totally, black.

♀. Unknown.

Length of abdomen, male, 58—65 mm. Length of posterior wing, 44—48 mm. Expanse, 91—98 mm.

This species is perhaps most nearly allied to *M. astictus* (of which I described the male in the Ent. Month. Mag., vol. xiv., p. 88). It differs especially in only the posterior wings having an opaque apical space, and in the presence of a pterostigma in the anterior (in *astictus* the male has no opaque apical space in either pair, and the pterostigma is scarcely indicated; the female has the apex of both pairs milky, and no pterostigma); also in the absence of a pectoral black line; in the shortness of the 8th segment of the abdomen, &c. Differs from *Jocaste*, and its race (?) *sincerus*, in there being no dark

band preceding the opaque apical space in the posterior wings. I have seen two males.

Mecistogaster linearis, Fab.

Many examples of both sexes, presenting remarkable variations in pterostigmatal conditions.

Mecistogaster Marchali, Rambur.

Several examples.
